

Learning Object #1: Done in Sliderocket presentation <http://portal.sliderocket.com/BKWTR/Cell-Division>

- Learning Object Title and Type:
  - [Cell Division: Mitosis](#)
  - Simulation Object
- Discipline or Subject and Grade level:
  - Biology, 10<sup>th</sup> Grade
- Competency addressed at the appropriate grade level  
Cell division involves many phases with specific processes occurring in each phase and can be very difficult for students to picture. This simulation provides important information for what is happening in each phase of mitosis along with a great animation to help illustrate the entire process. Also, it allows students to move at their own pace to ensure that the knowledge is being understood as they progress through the learning object.
- Learning objectives /purpose aligned with standards:
  1. Students will be able to identify the phases of mitosis. (F.12.2)
  2. Students will be able to explain how somatic cells differentiate using the simulation provided. (F.12.)(NETS 1.c.)
  3. Students will be able to create the entire cell cycle using terms discussed in class. (F.12.2)

Wisconsin Science Standards:  
F.12.2 Understand how cells differentiate and how cells are regulated

NETS Student Standards:  
1.c. use models and simulations to explore complex systems and issues
- Learning styles, preferences/modalities addressed:
  1. Visual (presents illustrations and animation along with text)
  2. Auditory (provides narration of information and process of mitosis)
  3. Kinesthetic (cut and paste activity)
- Assigned reading(s) & web resources:
  - [Mitosis](#) (Learning Object)
  - Click on the link above to view the information and simulation of the process of mitosis. Directions for the animation on the following slide.

- Use the link below as a research tool for the discussion question at the end.
- [Comparison](#)
- Activity associated with the learning object:
  - The phases of mitosis can be very difficult to remember so this activity should reinforce what you learned in the animation.
  - Click on the following link and create an electronic poster using Google or Glogster with the information on the sheet.
  - [Mitosis Cut and Paste](#)
  - Discussion Question: Answer the following question on the wiki page.
  - Now that we have seen the division of a somatic cell we will move on to how gametes (sex cells) divide. Hypothesize how division of sex cell may be similar and different than a somatic cell. Provide at least 2 similarities and differences. You may have to do some research to help you.

Learning Object #2: Done in Glogster <http://czellner.edu.glogster.com/cell-organelles>

- Learning Object Title and Type:
  - [Learning Cell Organelles with Games](#)
  - Practice Object
- Discipline or Subject and Grade level
  - Biology, 10<sup>th</sup> Grade
- Competency addressed at the appropriate grade level  
 The cell organelle game is a great way for students to practice learning the many different parts of a cell and their functions. Many times students struggle with the vocabulary because it is so foreign to them so taking the tutorial, playing the game, and taking the quiz is a great way to practice. The website provides great visuals for them as well which will help them with the cell model they must create.
- Learning objectives /purpose aligned with standards
  1. Students will be able to identify cell organelles in plant and animal cells. (F. 12.1)
  2. Students will explain the function of each cell organelle. (F. 12.1)
  3. Students will create a model of a plant or animal cell using the organelles discussed in class. (F. 12. 1) (NETS 1.c)

Standards  
 (F.12.1) Evaluate the normal structures and the general and special functions of cells in single-celled and multiple-celled organisms

NETS 1.c. Use models and simulations to explore complex systems and issues
- Learning styles, preferences/modalities addressed:
  1. Visual: illustrations of organelles

## 2. Kinesthetic: creating model of actual cell

- Assigned reading(s) & web resources:

Mitochondria Article

<http://www.sciencedaily.com/releases/2011/09/110902133104.htm>

Cell Organelle Games (Learning Object)

<http://www.sheppardsoftware.com/health/anatomy/cell/index.htm>

- Activity associated with the learning object:

Directions:

1. Click on Cell games under resources.
2. Spend time with the tutorial and play the game until you don't make any mistakes.
3. Take the quiz to review what you have learned.

Activity:

Now that you have practiced the organelles of a plant and animal cell you are going to create and design your own cell. Click on the following link to see the directions.

[Cell Model Project](#)

Discussion Question:

1. After reading the mitochondrion article what did you find surprising about the mitochondrion based on how we described it in class? Does this mean there is a direct link with another organelle in the cell? If so which one?

### Sources

Animated Tutorials: General Biology. (2010). Mitosis. Retrieved

from: <http://www.sumanasinc.com/webcontent/animations/biology.html>

Davis. (2011 September 2). New insight in how cells' powerhouse divides. Retrieved from:

<http://www.sciencedaily.com/releases/2011/09/110902133104.htm>

Sheppard Software. *Cell Games*. Retrieved from:

<http://www.sheppardsoftware.com/health/anatomy/cell/index.htm>